Towards a practical approach to responsible innovation in finance: New Product Committees revisited

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Working Paper
November 2011

Working Group on Responsible Innovation in Finance
Observatory for Responsible Innovation
Mines ParisTech
http://www.debatinginnovation.org/

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Abstract:

This paper examines the potentials of New Product Committees (i.e. New Product Approval) inside investment banks as organizational sites for the development of responsible innovation in finance. The manifold interpretations of the notion of responsibility are first briefly discussed. The functioning of New Product Committees in the financial services industry is then presented in detail. The features of New Product Committees are finally appraised in the light of the different interpretations of the notion of responsibility. The paper concludes with a series of policy implications and recommendations.

Keywords:

Financial Innovation, New Product Committees, Regulation, Responsibility.

Acknowledgments:

This discussion paper is the outcome of the work carried out by the Working Group on Responsible Innovation in Finance of the Observatory for Responsible Innovation, and initiative based at Mines ParisTech (the Ecole des Mines de Paris). Ideas and materials explored in the paper have been discussed in a number of meetings hosted by the Observatory for Responsible Innovation, and also presented at a number of seminars, such as the seminar on “Finance, Éthique et Performativité” at the Institut Catholique de Paris (7 April 2011) and at the 17th Meeting of the Common Core of European Private Law in Turin (16-18 June 2011). We thank Nadège Jassaud, Daniel Beunza, Jean-Claude Monod, Christian Walter, Michel Callon, Diane-Laure Arjaliès, Gema Tomás Martínez, Ugo Mattei, Agnes Schreiner, for their feedback on this project. Comments are welcome.

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1. Introduction

The global financial crisis of the late 2000s has sparked controversy on the merits and dangers of financial innovation, on the responsibility or irresponsibility with which it is conducted. As put by Gillian Tett, "the story of the 2008 financial crisis is a story not only of hubris, greed, and regulatory failure, but one of these deeply troubling problems of social silence and technical silos. If we do not use the crisis as an occasion to seriously tackle these problems, then it is a crisis we may well be doomed to revisit, albeit in an innovative new form" (Tett, 2009: p. xv). General agreement exists on the need to develop a more responsible way to handle financial innovation (Crouhy *et al*., 2008). But measures for the enhancement of responsibility in the financial services industry often stumble upon discrepancies between principles (doctrines and regulatory guidelines) and practices (ordinary conduct and routines). The regulatory appraisal of financial activities is often depicted by practitioners, supervisors and commentators alike as being unable to catch up with the increasing sophistication of current practice. Financial innovation is in this sense comparable to pharmacological innovation: new, synthetic molecules may circulate in the form of recreational drugs before the relevant authorities can consider their danger or even know about their existence (Dripps, 2009; Langlitz, 2009). Furthermore, responsibility is rarely considered an element embedded in professional habits, and more often seen as an external or complimentary constraint that would "add" to the practice. A means of responsibility that is culturally embedded would be one that is spontaneously and usually present in the interactions existing within the trading room of an investment bank or in retail banking branches, which is improbable (Carretta *et al*., 2010).

We characterize a practical approach to responsible innovation in finance as one that takes care to internalize responsibility in effective practice and that therefore sets normativity within financial cultures proper. What we call a practical approach can also be termed a pragmatic approach, in reference to both the mundane idea of practicality and to the pragmatist tradition in philosophical thought, with its emphasis on meaning as a practical test (Peirce, 1934). We contribute to this approach with a reflection on the features of an institutional place that is a venue for the development of a practical approach to responsibility:

the New Product Committee. Formed inside banks and investment firms, New Product Committees serve as a legitimating device looking into financial innovation at the very beginning of the design stage, and deliberating on the potential issues of the innovation under scrutiny. New Product Committees reflect on how innovations comply with rules and regulations, delimitate tasks and responsibilities inside the financial organization and validate the innovation decision. New Product Committees are thus instituted with the purpose of organizing and calibrating innovation but also with the intention of fostering accountability, consensus and conscientiousness in the innovation process (FSA, 2011). We believe that the role of New Product Committees in developing a culture of responsible innovation in finance should be acknowledged and also strengthened through a series of measures.

In order to carry out our reflection, we rely on a combination of the following methods: a series of multidisciplinary meetings and discussions with participants from the financial services industry and researchers from a variety of academic backgrounds (namely anthropology, economics, management, finance, mathematics and sociology), a brief review of regulatory texts, and an examination of field cases based on first-hand experience[1]. In section 2, we discuss the meaning of a practical approach to responsible innovation in finance: we examine a variety of views on the notion of responsibility and we test their potential signification in financial practice. In section 3, we introduce the New Product Committee in greater detail and provide contextual elements for understanding its forms and its regulatory appraisal. Two stylized cases illustrate how this specific device works and what it consists in. Section 4 offers a series of tests relating to the potential of each idea of responsibility highlighted in section 2, when faced with the practical situation of a New Product Committee (that is, we confront section 2 and section 3). We conclude with a series of policy considerations.

2. What is responsible innovation in finance?

The notion of responsible innovation has been subject to precise definitions in the field of technology assessment and in science and technology policy (Schot and Rip, 1997; Guston and Sarewitz, 2002). However, instead of focusing on a narrow, pre-established understanding

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1. The cases accounted for in this paper are drawn from two sources: the experience of group members participating in the project, and participant observations in two different organizational settings (a bank holding and a brokerage house). These experiences took place mostly in France and the UK. We also held a series of six plenary meetings between July 2010 and June 2011, completed with a number of *ad hoc* meetings.

of responsible innovation, we unfold a variety of ways to make sense of this notion in the area of finance. We list possible and sometimes divergent answers to the following question: when can a particular financial innovation said to be responsible and what exactly makes it responsible? For each answer, we outline directions for philosophical or ethical grounding and indications about practical implications. In short, we imagine the kind of world that the particular answer requires: this translates into different focal views on responsibility that we put to the test of the New Product Committee in subsequent sections. The focuses we provide in this section are not ordered in any particular fashion: they are just perspectives that emerged from our discussions, and should be understood as such. Our intention here is not to determine or impose any hierarchy on these perspectives.

2.1. Focus on function

One possible interpretation of the question could be: a responsible innovation in finance is one that respects the functions of finance in the economy. This refers to a functionalist view of financial innovation, as put forward by authors such as Silber (1983) or Merton (1995). Financial innovation is justified when it serves the economic functions of finance, which are, according to Merton, the provision of a medium for exchange, the funding of economic enterprise, the transfer of resources, the management of risk, the coordination of distributed decisions and the resolution of problems of asymmetric information (Merton, 1995, p. 463 sq.). This refers to functions that are considered positive by the functionalist proponent: this presupposes that the ethical debate on whether or not a function consisting in making money with money is good or bad (and for whom or for what) has already been settled. All in all, this focus requires the presence of a moral, and perhaps also scientific, authority that defines what the right (understood as both *correct* and *good*) functions of financial innovation are. On a practical level, this translates into the importance of a supervisory view: a regulator, best depicted as an external, disinterested economist, is observing what is going on, analyzing this in terms of general functions previously defined, and providing an assessment that may subsequently be taken into account in measures of sanction or reward (Bernanke, 2008; Gray and Hamilton, 2006; Spencer, 2000).

2.2. Focus on moral rules

A comparable but slightly different view would emphasize moral rules. A responsible innovation in finance would be one that is authorized with regards to superior moral principles. Here the major reference is to ethics, especially the Kantian tradition in moral philosophy (Longuenesse, 2005): Kant's categorical imperative or other comparable rules of mutual consideration and reciprocity dictate conduct and translate into collective good and order. This requires some type of shared cultural code or of social apparatus for policing individual behaviour: mechanisms of exclusion may therefore be implemented in order to remove faulty agents from regular collective life. From a practical financial viewpoint, this frame of understanding best translates through solid regulatory authorities, with a strong emphasis on the soundness of principles that ought to be imposed, as suggested by the literature on financial ethics (McHugh, 2006). Views on responsibility in financial innovation that explicitly focus on the respect for environmental and social requirements, and which explicitly mobilize ideas of reciprocity, remediation, solidarity and ecological order also contribute to this type of focus on moral rules (Blommenstein, 2006).

2.3. Focus on internalized values

A further nuance in the interpretation of responsible innovation in finance leads to focus on internalization. A responsible innovation in finance would be one that is carried out by agents with intrinsic moral values. Here we are still close to the Kantian view, but with a strong emphasis on the subjective, personal perception of conduct, and with a philosophical view of ethics as something distinct from morals (Ricoeur, 1990). The notion of values, as put forward for instance in the sociological tradition, is central (Weber, 1904; Parsons, 1966 and 1979). In short, patterns of conduct work well when they are internalized in the form of personal values. On a practical level, this sort of position leads quite naturally to stressing education, as educational institutions appear as the paramount vehicle for the transmission of values. In the field of finance, this standpoint corresponds to a pedagogical view of responsibility. The civic education of elites, the introduction of ethics in curricula for the professional development of business people, instilling values among students of business administration are among the measures that characterize this understanding. The MBA Oath at the Harvard Business School serves as an example of this type of struggle to make future financiers more responsible (Khurana, 2007).

2.4. Focus on aggregate consequences

Another way of tackling the problem of responsibility would consist in focusing on unintended negative consequences of innovation. A responsible innovation in finance would then be one that considers the effects of its own diffusion. Some aspects of the categorical imperative and its modern expression are also visible in this frame, with emphasis on the temporal dimension (Jonas, 1979). Responsibility is about taking stock of the consequences of today's action on the state of the world tomorrow. The responsible innovator has to imagine how the world would look like if the innovation successfully spreads and also if other actors start copying it and disseminating it further (a responsible innovation would be one that could be fully promoted, even in the event of its appropriation by every other actor within the considered field). Reference to outstanding superior principles is less pregnant than in other interpretations of responsibility. What counts, first and foremost, is accounting for the effects of action. There is a neat emphasis on the economics of negative externalities and also on reflexive modernization and the risk society (Beck, 1986; Giddens, 1984 and 1990). In the practice of financial innovation, these intuitions often translate into pleas for more and better modelling and forecasting, for simulating extreme conditions, for developing models about the diffusion of models, and so forth (Hutter, 2005). In short, responsibility means more science, although this proves sometimes impractical and also prone to further escalation.

2.5. Focus on accountability

Our fifth interpretation of responsibility focuses on action, to the authorship of action rather than to the principles that may guide it. A responsible innovation in finance would be one for which responsibility can be traced and for which an author is ready to acknowledge liability. Here the strong idea is that there is an identifiable respondent: the innovator does not escape its creature, willingly remains present and cares for it even if the innovation turns out to be awkward and burdensome. Philosophical elaborations of the idea of the respondent have been proposed in this direction: to be responsible is to answer for something and towards someone (Lévinas, 1961 and 1972; Hache *et al.*, 2010). The idea of the signature working as the trace of an author and as a device for the attribution of authorship (hence, responsibility) is also close to this viewpoint (Agamben, 2008). A financial world that corresponds to this understanding is a world in which actions are traceable, a world in which signature is critical, a world of disclosure and attribution of liabilities, a world of audit[2]. More generally, the practices of verification that have come to characterize what researchers in accounting studies have called the audit society (Power, 2007) exemplify this idea of responsibility as accountability.

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2. In this respect, we may think about the Sarbanes-Oxley Act of 2002, which somehow fostered a new practical culture of signature attempting at tracing responsibility down to an individual level.

2.6. Focus on precaution

Another process-oriented way of making sense of responsibility is in terms of precaution. Along this line of thought, a responsible innovation in finance is one that is developed within a safety net. The so-called precautionary principle comes here to the forefront, a principle that is not to be understood as the impossibility to innovate but rather as the necessity to try to delineate a rescue path. Innovating with care, avoiding excesses, considering proportions and scope of engagement are all characteristics of this understanding, which connects with a Spinozist tradition in ethics (Deleuze, 1981) or Canguilhem's philosophy of disease (Canguilhem, 1943). Emphasis is put on the experimental nature of the innovative act, and thus on the shift from laboratory experiments to real scale situations. In the field of pharmacovigilance for example, the market is recognized as a genuine testing site, a place in which a drug recall can be swiftly organized (Daemmrich, 2004). Precautionary ratios of all kinds serve this viewpoint in the financial services industry, starting with minimum capital requirements defined in the Basel Accords (BCBS, 2006). A hypothetical financial world that would be configured along ideas of precautionary responsibility would be one characterized by frequent moratoria on the release of new financial products, by the definition of experimental perimeters, by surveys and indicators that monitor the effects of particular products and by instituted methods for recalling products. Banks that withdrew from the subprime credit securitization market in 2007 in response to signals of pricing flaws recognized this type of notion. The same point can be made with Basel III and the creation of new "capital conservation buffers" corroborates this view (BCBS, 2011).

2.7. Focus on democracy

Finally, responsibility could also refer to inclusive debate and to the empowerment of stakeholders. A responsible innovation in finance is one that would be rendered discussable by all concerned parties. As in other fields of innovation, financial innovation is not exempt from controversy. But, as has been shown in the field of science and technology studies, controversy is a characteristic of the advancement of science (Latour, 1987). Literature on the democratic governance of science, on participatory innovation, on deliberative polling, consensus conferences and other advances for the participation of the public in technical controversies has examined the relevance of democracy in fields as diverse as nanotechnology, nuclear policy, medicine and biotechnology (McCarthy and Kelty, 2010). The notion of hybrid forum refers in this field to assemblies of informed, concerned parties that assume collective responsibility for one particular issue through their involvement in decision-making, especially in situations where the consequences of action are highly uncertain (Callon, 2007, Callon *et al*., 2009). Several initiatives in the field of corporate social responsibility openly point towards this type of direction (Basu and Palazzo, 2008), through emphasis on a stakeholder approach (Freeman, 1994). For example, some initiatives in project finance openly include measures of public participation in the strategic decisions involved in large infrastructure projects (Van Gelder and Vander Stichele, 2011). A financial world that would fully comply with this viewpoint would, for instance, be one in which a hybrid forum is constituted for every important act of innovation.

We have listed seven possible notions of responsible innovation in finance: each points to different philosophical requirements and to different empirical arrangements. Some would clearly require the presence of a supervisory, transcendental observer, endowed with particular forms of knowledge and authority, and informed by a series of precepts, while others focus more centrally on self-sustained procedures and on the intrinsic characteristics of practice. Some rely more evidently on the moral qualities of the innovator, while others favour a more distributed, less personal view of responsibility. As we have seen, each view matches different financial worldviews. Do we need more regulation? If so, do we need hard rules like imposed ratios? Or, should soft rules requiring contextualized interpretations be pushed forward? Do we need more education, more socialization to responsibility? Or do we need more feedback, more information and more science? All the options that we have outlined in this section are interesting in themselves, and also in combination with each other. The crucial test is now how practical they are, that is, how they can be embedded into the ordinary day-to-day practice of the financial services industry. For the test to materialize, we have chosen a particular place that is in our view of very high potential interest for the practical realization of responsible innovation in finance.

3. A practical place for responsibility: New Product Committees

In the financial services industry, the New Product Committee corresponds to a local instance where innovation is discussed (BCBS, 2008; CCLRF, 2005; JFSA, 2007; FSA, 2011). It is a device fostering responsible innovation and, among other things, a venue for debating, discussing and describing new financial products and activities. Considerations on the consequences, the compliance with regulatory frameworks and the attribution of responsibilities take place within this device. In this section we highlight some regulatory and institutional aspects, we provide two case-based examples of the ordinary operation of New

Product Committees in the financial services industry, and we offer a critical commentary on the practical issues that characterize New Product Committees (hereafter NPCs).

3.1. Institutional and regulatory aspects: elements for a tentative genealogy

New product approval processes have been in use for quite a long time, for instance taking the form of project development groups. However, it seems that the institutionalization of NPCs occurred quite recently. Traces of their emergence may be found in the framework of the Basel II Accords (BCBS, 2006), more precisely in an annex relating to the third pillar (market discipline), and discussing the evaluation and assessment of models[3]. Starting with this idea, local regulators have been introducing the idea of a mandatory approval for new products.

The Japanese Financial Services Agency mentions an obligation relating to the "Handling of Screening of New Products" (JFSA, 2007, p. 9), translated on the organizational level by a division or a committee in charge of New product approval[4]. In France, the revised regulation CRBF 97-02 makes it mandatory for credit institutions (banks) and investment firms (e.g. brokers) to formalize their assessment of the risks incurred by the creation of new activities and new products[5]. While the French regulation does not explicitly specify the need for a committee, collective decisions about financial innovation are being made through this institutionalized form (AMF, 2006). In the UK, a recent discussion paper issued by the FSA underlines an "intensive supervisory approach" to new product development and assessment, and leaves almost no doubt about the necessity of such venues for debate. This makes it clear that regulation is moving from an *a posteriori* standpoint to an embedded form of monitoring, which takes place within the innovation process, in order to intervene "earlier in the product chain if necessary, to anticipate consumer detriment and choke it off before it occurs" (FSA,

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3. BCBS (2006, p. 267): "To the extent that the internal model relies on proxy market data, for example for new products where three years of historical data may not be available, internal policies must identify suitable proxies and the bank must demonstrate empirically that the proxy provides a conservative representation of the underlying risk under adverse market conditions".

4. JFSA (2007, p. 9) mentioning a "system to have [new products] priory subject to screening and approval (hereinafter referred to as 'New Products Approval)' by a division in charge of screening New Products or a committee in charge thereof".

5. CCLRF (2005, art. 11-1): "Reporting institutions shall draw up specific procedures for assessing compliance, including: procedures for systematic prior approval, including a written notice from the compliance officer or a person duly authorized by the compliance officer for the purpose, for new products or changes to existing products with significant implications for the institution or the market".

2011, p. 16). Similar attention to the reviewing process can be found in recent publications from industry associations in the US, somehow reiterating concerns expressed by NASD regulations[6].

All these elements account for the formal multiplicity that can be found in regulatory regimes assessing innovation in the financial industry. Turning to investment firms and based on our observations, we distinguish at least two different types of NPCs aimed at assessing on the one hand either one or several dedicated transactions; and on the other hand the dissemination of a new product, or the ability for clients to access new markets. These two distinct purposes, while accounting for internal processes constructing a procedural certification within the financial institution are described in the following section.

3.2. Ordinary operations

We now describe how NPCs operate on a day-to-day basis: we provide two examples relating to different types of NPCs, grounding in different institutional contexts: (a) the opening of an access to a new market within a brokerage house, (b) the construction of a complex derivative in an investment bank.

3.2.1. Offering access to a new market (Case #1)

Broker A is a pan-European brokerage house based in Paris with offices in a dozen countries in Europe and the US. As the company is a middle-sized organization with approximately 800 employees, it is able to centralize the NPCs at the headquarters in Paris. The NPCs we observed took place in a meeting room, and could be extended to external locations through the use of conference calls and video transmissions. Gathering people to assess the risks incurred by the development of a new product implies a presentation: hence the role assumed by the Organization Department, who would send an email providing elements to be discussed, usually in the form of a PowerPoint presentation. These presentations would afterwards serve as a support during the assessment process, from initial questions to (sometimes partial) solutions. The documentation would be archived in a database accessible

6. SIFMA (2011): "While suitability requirements and other sales practice obligations attach to the recommendation and sale of a product, adequate procedures for reviewing new products before they are offered to the public can greatly enhance a firm's ability to detect and avoid conflicts, unsuitable recommendations, and other problems before violations occur".

online by every concerned person within the company, and the collective approval materialized through electronic signature.

During the meeting, these presentations describing the proposed set-up and the options to be discussed help framing the discussion, opening and closing sinuous paths in the product design process. After a brief introduction explaining the purpose of the activity and detailing the timeframe for its development, every NPC representative (heads of concerned departments or their delegates) has the possibility – if not the obligation – to ask questions about specificities and concerns, and to express his or her opinion, but also conditions for his or her approval. Members would join relevant documentation (regulatory texts for instance, provisional accounting patterns or technical specifications) and summarize for the assembly the issues crystallising within the new product. The "to do list" would then be determined, and supplementary tasks would be distributed. For innovations requiring more than one gathering, the "kick-off" meeting would see the presence of everybody, even those of the NPC members who know that they would not be directly involved with the innovation. The reason for this is that the Organization Department in charge of the NPC preparation was not always in a position to list all the elements that could impact the activity.

In the case of the opening of a new access to the Cyprus market, the idea came from discussions between a client, a sales and the management: expressions of interest materialized internally with the gathering of a "Cyprus NPC", the very formalized sign that newness appeared as a consequence of a developing activity in south Europe. The NPC offers a place for the expression of multiple concerns, ranging from the typology of accepted instructions, to the possibility to use trading algorithms or do block trades. Back and middle-office departments would ask questions about the timeframe for the cash and settlement cycle, the warehousing accounts, the delivery failures and other buy-in procedures, while the IT department would focus the debate on testing environments for managing connectivity issues and exchange requirements as regards the technical identification of traders. The compliance and control department would look into the local structure of regulation, ask for any restrictions (such as short selling, account segregation, accepted market practices) and raise potential concerns regarding market abuse, anti-money laundering or the robustness of the clearinghouse.

What we can see here is a hands-on set of simple though fundamental queries, encompassing both questions on future practices (once the access would be open to the firm's clients) and the consequences of this reconfiguration of routines within the company. Efforts to measure the impact of the new activity are therefore constructed. Discussions would be moderated by the NPC President or the Organization Department, who in the end would ask every participant to provide his or her approval, whether pending conditions or not.

3.2.2. Organizing new product approval processes (Case #2)

Bank B is a global investment bank, present in more than sixty countries all over the world. Within Bank B, as is usually the case in similar institutions, new products or new activities are distinguished from complex or non-standard transactions approval. The case described here qualifies as a NPC.

Within Bank B, the business sponsor, that is to say the officer in charge of the transaction, is responsible for the preparation of the NPC. The committee in itself is organized as follows: a Chairman, who is a senior representative of the business, is responsible for making the final decision, once permanent members (risk, compliance, legal, tax and finance department senior representatives) and invited members (appropriate representatives appointed after discussion with the business sponsor, e.g. dedicated operational risk or permanent control representatives) have all expressed their concerns. Permanent members also have the ability to initiate an escalation process, should they deem it necessary, thereby temporarily suspending the validating process. Those rare cases would occur when at least one of the NPC permanent members thought that the reputation of Bank B (including for example issues relating to the management of conflicts of interests) was at stake, or that the operational risks were too serious for the NPC to tackle on its own. As NPCs may be held locally, local Heads of businesses are involved in the NPC, so as to guarantee that local practices and regulations are complied with.

In this particular setting, and in contrast to the organization in force within Broker A, the business sponsor assumes a greater responsibility, as he is in charge of preparing and documenting the pivotal elements within the NPC repository (a database where all relevant information is stored, together with the NPC minutes and approval). The document prepared by the business sponsor describes the features of the new product, and identifies the resulting impacts for the bank, including but not limited to the booking, valuation and risk management. Based on this document, members of the NPC have to provide a written statement to the business sponsor, justifying their position on the new activity or product under scrutiny. In order to get a new product approved, the sponsor starts by organizing informal one on one meetings with the different functions in the bank to get their reaction. These are followed by long email chains involving several participants. The final committee is an open meeting with all members, allowing for the review of the new product taking into account every different perspective, so that final misunderstandings and disagreements can be expressed and dealt with. Once the validation has been granted by the NPC, the approval is valid for a 12-months period, unless agreed differently, before the NPC gathers to reassess the product.

Within Bank B, the Operational Risk Department assumes a complimentary role: not only does it take part to the NPC process, but it is also responsible for a preliminary assessment of the risks generated by the new product, especially with regard to operations and information technologies. Furthermore, the department has a duty to review the processes linked to the new product, together with the related potential incidents, three to six months after the launch of the activity.

3.3. Practical issues and critical diagnosis

In light of these descriptions, we can raise a series of practical questions. The first concerns the openness of NPCs in the financial services industry. How inclusive are they? Who attends meetings and who participates in view-sharing and decision-making? NPCs in the financial industry are generally open to a multiplicity of parties, but limited to the internal perimeter of the credit institution or the investment firm. Some financial activities such as project finance make it mandatory to enlarge the number of interested parties (Wright and Rwabizambuga, 2006). In fact, the examination and validation of projects in this area requires discussion with the many stakeholders involved, directly or indirectly, in the project (e.g. the building of a giant dam might involve the relocation of local populations). In the case of mutual banking or financial services associated to industrial cooperatives, there might even be other unusual stakeholder representatives. To our knowledge and until now however, there is no widely shared practice of widening the NPCs perimeter to external concerned parties (most probably, as a direct consequence of issues of strategy and competition).

The second question is on voice and decision-making mechanisms. How are debates and discussions organized? Who can raise issues? How are decisions taken? The general observation is that the current practice of NPCs is in principle open to the expression of multiple viewpoints: relevant departments inside the bank can raise concerns about routine back-office tasks, issues in regulatory compliance, risk analysis or the commercial relevance of the innovation (have clients really expressed an interest in this innovation?). Our observations though tend to underline the organizationally-embedded character of NPCs, which are very dependent on the local culture of the financial firm. In some cases, for example, a marked sense of hierarchy, an over-emphasis on competition and profit or a harsh climate of professional progress may lead to situations in which some actors refrain from expressing concerns, or are even sometimes simply not heard. In any case, and to the best of our knowledge, there is no widely disseminated template for the governance of participation in NPCs, apart from what is fixed in the internal procedures of each financial institution.

The third question is about the types of risks that are produced and examined, when referred to the potential behaviour of the financial innovation under discussion. How are those externalities considered? Are there multiple ways of simulating the potential effects of the innovation? How are these simulations understood and used? A robust risk department, fully independent from business lines and directly reporting to the top management, can play a pivotal role, as we have seen with Bank B. Another question that needs to be raised here is the idea of reversibility: in fact, regulatory texts mentioning NPCs (see 3.1.) usually make it clear that a cyclic revision process needs to be implemented, so that the consequences of new product dissemination can be regularly reassessed, as is exactly the case with classical risk-management procedures: “To avoid having a program that operates on autopilot, an organization must continuously reassess its risks and controls and communicate with all employees who are part of the compliance process” (Schmidt Bies, 2006). Discussions relating to the appropriateness of further developments, or on the contrary on backward preventive steps can therefore occur before the innovation is too widely disseminated, and hence difficult to restrain.

The fourth question concerns the attribution of responsibilities. How are responsibilities distributed? How is accountability determined? Within NPCs, the decision to go ahead with a financial innovation usually results in the production of documents signed by involved parties (e.g. electronically, as at Broker A), which therefore certify that signatory parties are made accountable. Decisions also translate into the distribution of tasks: for instance, the decision concerning the release of a complex new financial instrument will specify which back-office structure is to handle it and thus take responsibility for issues relating to the clearing and settlement of transactions.

The fifth question is about records and databases. How is information stored and specifications recorded? Do NPCs always constitute a sort of organizational memory of innovation decisions, the circumstances within which they originated and their consequences? And who can access the data repositories to gain knowledge or audit the innovation process? Within Broker A and Bank B, follow-ups, reviews and audits are included within the organizational architecture leading to expressing concerns and to the traceability of decisions, thereby contributing to the development of internal organizational learning. A supplementary question can however be formulated here: is it possible to imagine that some elements pertaining to the NPC be made public? Indeed, the purpose and development of NPCs could potentially benefit a larger audience. We conjecture that positive outcomes could be generated from a wider appropriation of innovation assessment awareness.

The sixth question is about the definition of novelty. How are products or processes considered as “new” or not? This is probably a difficult question, since NPCs are sometimes seen as an administrative burden, impairing the true nature of innovation (employees from business lines generally hold this view). There is often a struggle in the definition of what novelty is, precisely in order to avoid calling an NPC related to the specific object under consideration. Contrary to project management committees, NPCs are not always popular among bank employees. The fact that NPCs somehow produce legitimacy and allow new products to join the chain of existing products may not be sufficient to make it an attractive feature. Efforts towards NPC avoidance within some departments at Broker A revealed this point.

The seventh and final question we raise is about compliance: how is compliance with rules and regulations assessed? Within NPCs, compliance officers (or comparable risk-professionals in charge of regulatory verification inside the financial firm) are not only present: they usually have the right to veto the development of a new product. The continuing institutionalization of risk and compliance functions within financial firms (Power, 2005, 2009) could indeed trigger a new kind of relationship towards innovation, where discussions with regulators, whenever needed, can take place in order to get approval or pre-investigate official positions on some aspects and specifications of the product under consideration. These kinds of interactions are usually smooth but they are sometimes characterized by a phenomenon of double bind (or pragmatic paradox) in which the compliance officer is caught between contradictory commitments: towards the development of its firm’s activity, and towards the regulator.

Overall, NPCs provide a useful tool for structuring innovation in the financial services industry. When they exist in an explicit organizational form inside a financial firm or a credit institution, they tend to be taken seriously: in fact, our observations make us think there is a great potential for NPCs to become “hubs” for responsibilization, even though some of their constituents may need to be retooled in order to fully serve that purpose.

4. Responsible innovation inside New Products Committees

In this section, we compare and contrast the organizational form of the NPC with the seven different understandings of responsible innovation in finance that we have put forward. We examine, in an exploratory manner, what NPCs bring and can bring to each, and how. This results in a pluralistic view that can inform both organizational measures and policy thinking.

4.1. Focus on function

The NPC is a place in which the function of the product can be discussed and made explicit. It literally is a place for explicitness, that is a place where things can get unfolded to the bitter ends. Among the current problems which may hamper this is the fact that participants usually do not take enough time to prepare (and to prepare for) the NPC. It is sometimes very difficult to push a view on an aspect because of deadlines or because of the styles of management that emphasize urgency and top-down decision-making. In some cases, NPCs look like a chamber in which decisions taken earlier are simply rubber-stamped. Also, NPCs do not consider the presence of some kind of an instance to which the function (economic or otherwise) of the product ought to be justified. We conjecture that the introduction of an incitation to functional explication could serve responsibility: a simple explanation providing the elements justifying such an innovation.

Retooling NPCs in this direction means, at least in part, providing the appropriate environment for a proper explanation of the potential functions of the innovation at stake. Parties involved in the innovation process need to understand what interests the innovation serves and why, and what time frame is required for this work of reflection and explanation. A potent device for encouraging functional explanations would be the introduction of an interlocutor to whom the functional properties of the innovation should be properly and convincingly explained. An external observer, appointed with the necessary confidentiality clauses, could stimulate this call for functional explanation. It might be very difficult to identify external experts who could take the role of an external, disinterested economist that we identified as a pivotal element of the functional perspective on financial innovation. Making it mandatory for the person sponsoring the product to be in a position to explain its very function would definitely add to the process in that P&L or client satisfaction would not be the sole purpose of the product development. Moreover, broadening the functional horizon of the product or activity by requesting financial firms to publish – after a six-month delay for example – the outcomes of discussions taking place within NPCs might constitute an opportunity for functional explicitness: at least, financial innovations with no clear purpose (whether economic, social or otherwise) would appear as such.

4.2. Focus on moral rules

The NPC's focus on moral rules revolves around the presence of the compliance officer. The NPC is a relay towards regulators, and thus constitutes the place in which this control function really acts as a respondent. Compliance officers, who perform a two-fold task (both within the financial company and with reference to an external regulator), screen the different aspects of the innovation and try to find unaddressed or under-addressed issues, questions that could lead for instance to reputational risk, a matter of concern which is difficult to identify and control. They also discuss options and decisions and can provide legitimating support to those among the participants who might have problems expressing their position (e.g. in some institutions support functions such as the back office are in a weaker position compared to "productive" business lines).

But this presence and operation of compliance officers remains rather tacit; even if they can rely on a detailed statement that clearly puts forward their pivotal role inside NPCs (see CCLRF, 2005, art. 11, or Schmidt Bies, 2004: "Compliance personnel should have an active voice in determining whether a particular activity or product constitutes a new product requiring review and approval"). It should be made clearer that their role is not limited to warranting regulatory verification and conforming innovation. The pivotal role of the compliance function opens possibilities towards better discussions and contextualized interpretations of the innovation. An active role of triggering questions and orienting answers should probably be reaffirmed, building on the symbolic representations framing the function (compliance officers are seen, in some organizations, as "high priests" safeguarding the morality of practices). The focus on moral rules includes, as we indicated, some sort of a "categorical imperative" or a form of moral order that requires a tutelary method: the indirect sanctification of the compliance officer (in the form of a "moral commissar") may be excluded as a valid anthropological alternative, but elements attached to the symbolic representations generated by the function could definitely be taken into consideration.

4.3. Focus on internalized values

The NPC is currently part of in-house banking and financial culture, or at least it is likely to become so. Statements produced within this venue are pronounced in the first-person plural. Although this could correspond to the blank corporate "us" of marketing communication, it can also be part of corporate culture and collective sensemaking inside the organization (Argyris and Schön, 1978; Weick, 1995). In one sense, the NPC introduces a series of organizational habits, which are the prerequisite for internalizing norms into practices.

Strengthening the penetration of responsibility into habits through NPCs can follow the usual tracks of cultural engineering: ritual and training.

Organizational rituals in corporate life (Meyer and Rowan, 1991) refer for example to the power of routines materializing in the regularity of meetings, the following of procedures and the validation of documents. What sort of managerial innovation could improve NPCs in that direction? A form of ritualization such as the formalization of a role hierarchy within the NPC could be introduced: for instance, an employee with an associate level would draft the minutes, where a vice-president would be in a position to sponsor the NPC. A senior manager would be able to chair the NPC, while a managing director would have a veto right. Hence the formalization of seniority within NPCs could allow for the creation of rituals, making it mandatory for employees who would like, for instance, to sponsor a NPC, to access such a position. This way, using NPCs for the development of carefulness within innovation processes could contribute to sharing internalized values: taking part in NPCs would be considered as a way for employees to each contribute to the co-construction of shared values within the organization, while at the same time developing one's own career within the organization. As for training, which is also a role partly attributable to compliance officers, NPCs could serve as an entry point for developing a case-based pedagogy (e.g. following the Harvard case method), explicitly considering the NPC operation in the context of business simulations.

4.4. Focus on aggregate consequences

The NPC is a place where several forms of simulation and forecasting are played against each other, each voicing particular concerns. The usual risk metrics apply: efforts towards transforming future events (uncertainties) into identifiable occurrences (risks), as exemplified in Case #2, can prove tricky. As specialists of modelling know only too well, it is virtually impossible to anticipate the future behaviour of a financial innovation, once it is let loose (Knight, 1921, Bernstein, 1995). It may be possible to model the financial evolution of a financial innovation under reasonable conditions (e.g. its expected return, the stability of its pricing process and of its constitutive elements), taking into account both regular and extreme evolutions of the wider context of the financial organization and the economic environment (as is currently done with stress testing), but simulating, for example, the path-dependent, network-shaped process of innovation, dissemination and its unintended aggregate consequences is at best an ex-post scientific venture.

Furthermore, aggregate consequences can materialize as result of at least two different situations: either as a result of repeated events (a trade or a product) initiated within the same institution, or as a consequence of the appropriation of the event by other actors of the field (competitors). For this reason, NPCs should be duplicated at the regulatory level, so that an external adviser can get the view that autonomous participants cannot structurally contemplate. In fact, responsibility for the assessment of structural modifications of the field would mainly rely within the regulator, thereby requiring specific modes of regulation.

With this in mind, the NPC is the place in which the limitations of modelling and forecasting can be acknowledged. First, multiplying the angles through which aggregate consequences are modelled, and submitting these to qualitative scrutiny is a fair response to the limitations of the knowledge upon which decisions are taken. If a model is an aid to imagination, it is certainly not a substitute for it (Morgan and Morrison, 1999). Second, the NPC can actually commit to the reversibility of its decisions, which can actually be revised in the light of the information generated by the practical test of implementation. Several NPC related regulations state the need for a regular cycle of reassessment (see 3.3.): however, our observations showed that it is sometimes very difficult to make business departments within financial firms understand and participate in the reassessment process.

Once the innovation has been issued and starts generating revenues, employees seem to be reluctant to go through a revision process. This difficulty may be specific to finance, since other economic activities have been developing more efficient reassessment and recall processes (e.g. pharmacovigilance in the pharmacy industry). A solution to promote better follow-up on financial innovations may then be to formalize local (national) NPCs, hosted by regulators (the AMF or the ACP in France, the FSA in the UK, etc.), where financial firms would be obliged to explain privately then publicly the consequences of their innovations. The two levels distinguished here would make it possible for the institution to discuss on a private basis with the regulator, making the latter aware of what is developing in markets. After a delay period (e.g. 6 months), the early developments and preliminary outcomes – whether positive or negative – could be presented and discussed between industry participants. The results could then be made public: providing early access to the information, while at the same time finding ways to maintain a competitive advantage could be a role explicitly given to NPCs.

4.5. Focus on accountability

During the NPC, several parties define, explain how and accept (or not) to take responsibility for some of the elements constituting the product (whether coming from the front office, the back office, the legal department, the information technology department, etc.). Retooling the NPC within this specific perspective would consist in furthering the discussion on what would be done if things turn sour. Making explicit statements allowing for the accountability of NPC members would probably help to build a shared commitment towards accountability. During the review process, adverse effects or negative externalities for all parties potentially impacted could systematically be discussed, by every NPC participant, thereby not restricting the close monitoring of negative impacts to the risk department.

Within Broker A, the post-NPC review process, although required by the procedures, was one of the most difficult parts of the global process because the NPC had an acyclic existence, being the expression of punctual innovations. Assuring a continuing life for NPCs is probably an area for reflection and discussion, so that NPC members make sure the process itself does not dissolve once the product or activity has been launched in the market. Holding NPC members accountable for this follow-up, either supporting the organization department (Broker A) or tying part of the bonus of the business sponsor to his or her ability to demonstrate that post-review assessments have been performed (Bank B), could help. Consequently, putting in place a system that would take into account staff turnover, with an internal recertification process requiring the new joiner to formally reassess the statute of the innovation would probably help strengthening the idea of accountability.

4.6. Focus on precaution

As far as the precautionary perspective is concerned, the NPC should be the place where questions about the acceptable amount or proportion of innovation could systematically be raised: does the NPC want the innovation to be disseminated on a massive scale, or on the contrary, should it begin on a small scale? To the best of our knowledge, this point is not addressed today. The introduction of a clinical perspective caring for the experimental nature of the product, even after it has been put in the market, would illustrate this direction. This could translate for example in the development of feedback indicators inspired by pharmacovigilance, protocols for recalling faulty or harmful products, or at least for stopping their release.

For this view to be effective, an industry-wide initiative led by financial institutions and regulators could set indicative precautionary thresholds for the size and scope of an innovation, preventing full mass-marketing before a testing period. We acknowledge that this proposal may cause problems in terms of competition, but it seems to us a realistic one in industrial terms (the pharmaceutical industry has been able to organize such testing environments). In this respect, we think investment firms should take an active part in developing recall mechanisms that could be activated on demand. These mechanisms could be designed to protect both the institution and the wider financial system.

4.7. Focus on democracy

We have seen that NPCs allow for an informal deliberative process: concerns are voiced by multiple parties, discussed and fixed in a collective memory (a data repository, more or less easily accessible). NPCs can even play a proto-therapeutic role in the following sense: being able to talk and to raise concerns before action is taken may prevent more serious distress when facing the consequences of unspoken issues in a catastrophic situation. NPCs should be places for genuine discussion or conflicts. This observation raises questions about free and effective expression of such concerns within the institution: in other words, how can NPCs qualify as internal forums for exchange? How should they be designed to mitigate inequalities resulting from organizational charts and functions?

Keeping this perspective in mind, we suggest the introduction of a procedure making the NPC a place where every voice has the same value, irrespective of its (organizational) origin or attachment. NPCs should qualify as democratic spaces where members' status would be flattened to produce a level playing field. This would come with an obligation for NPC members to take an active part and to express their views (democracy lives when it is used). An internal ombudsperson or the compliance officer could both make sure that participants abide by this rule (perhaps by signing an "NPC code of conduct") and protect the less powerful members.

Furthermore, our reflection suggests that the model of public participation in technology assessment should be imported into financial innovation: examples seen within technical democracy (Callon *et al*., 2009) could definitely help in making NPCs more open to their environment. This point would mean widening the stakeholders, or opening NPCs to external participants, such as branch employees, or a panel of clients (e.g. retail investors) who would be indirectly impacted by a financial catastrophe generated by the innovation (with reference, for instance, to the recent minibond crisis in Asia[7]). This is a maximalist view, probably an

7. See Shadbolt (2011).

impractical one: that would generate adverse effects turning the NPC into some sort of a simulacrum where participants would come and play a role with no serious intentions.

5. Conclusion

Our analysis translates into a set of proposals concerning five areas: the relocation of NPCs at the core of professional life in the financial organization; a better formalization of NPCs; a better mangement of post-assessment review processes; the emphasis on their nature and their role as pertinent devices for embedding democratic mechanisms within financial innovations; and the inspection of NPC processes. Those proposals are expressed within the following five principles:

An *implication principle*, where financial firms would introduce within their HR employee development programs evaluations and incentives relating to NPC "membership". In order to foster interest and the personal implication of employees, firms could make it mandatory for employees wishing to take top management positions to play an active role within NPCs. Conversely, NPC participation could be internally valued and promoted as an internal reward for employees focusing on ethical behaviour, not only profits. Senior compliance officers together with senior management should be involved in the process of nominating "NPC eligible" employees. This would definitely help employees internalize the idea of responsible innovation.

A *formalization principle*, where financial firms would need to follow a common framework for the description of the innovation at stake, summarizing the key proposals concerning the elements discussed, the information stored and published. Current regulation do not systematically provide a framework, which results in a rather heterogenous approach to the NPC issue. The framework could be as such: a detailed description of the product or activity (that is, understandable by a non-expert), an explanation of the pupose of the product or activity (for the firm, its clients, etc.), an explanation of potential externalities (for the firm, its clients, etc.), an assessment of the limits to modeling and forecasting encurred by the product or activity, an assessment of the size and scope of the product or activity dissemination, and finally an explicit signing by all relevant functions (including relevant re-certification if needed).

A *revision principle*, where financial firms would have an obligation to better formalize NPC reviewing processes. At present, such mechanisms do exist in the majority of regulations[8], and chances are that the majority of financial actors have written procedures providing such arrangements. However, our discussions with professionals, supplemented by *in situ* observations showed that the reviewing process is not systematic. Extending and clarifying the NPC as an institution would encourage the development of responsible innovation in finance. Detailed indications for their governance are definitely required. Within this specification effort, NPCs should be defined, at least in part, as organizational devices in which the responsibility for the innovation is correctly debated and fully assumed. Efforts towards greater responsibility mean, in this respect, being in a position to meet regularly to assess the effects of innovation in an ever changing environment, particularly when the innovation might have had an influence on the changes observed.

A *publication principle*, where financial firms would have an obligation to produce NPC related documents as justification for the development of their innovations. These documents would be made accessible on their institutional websites and lodged in a national database. Regulators would need to define the nature and amount of information to be disclosed precisely, with a view to making outcomes and externalities (that is, justification) obvious to anyone interested in that kind of knowledge. Here, we could imagine a formal process where interested parties could publicly express their concerns about the innovation under consideration, and ask for clarification. This should lead to a true deliberative democracy, with firms engaging in a constructive dialogue with the public, because maintaining a dedicated space for discussion constitutes the essence of effective democracy.

An *auditing principle*, where NPCs could be inspected on a random basis by a third-party, for example a regulator. Random inspections would facilitate the internalization of responsibility and accountability by NPC members. We suggest introducing this disciplining technique in the organization of the innovation process, where members of the NPC would need to perform genuinely: not knowing if their way to embody their function, as members of the innovation process, would or would not be supervised by this third-party. Knowing that the committee is auditable at any moment would definitely help transforming the routine character of NPCs, which sometimes are just rubber stamps. Failure to follow the implication,

8. See, e.g. CCLRF (2005, art. 32-1): "Reporting institutions shall regularly re-evaluate their systems for measuring risk and determining limits in order to verify their relevance in the light of developments in the business, the market environment, the macroeconomic environment in which it operates in relation to the business cycle and analytical techniques".

the formalization, the revision and the publication principles should lead to sanctions, starting with the partial or full ban on new product and activity development.

References

Agamben, G. (2008), *Signatura rerum. Sul Metodo*, Bollati Boringhieri, Torino.

AMF (2006), *La commercialisation des services d'investissement et des produits financiers: analyse des rapports adressés à l'AMF en 2004*, January.

Argyris, C. and Schön, D. (1978), *Organizational Learning: A theory of action perspective*, Addison Wesley, Reading, MA.

Basu, K. and Palazzo, G. (2008), "Corporate Social Responsibility: A Process Model of Sensemaking", *Academy of Management Review*, Vol. 33, No. 1, pp. 122-136.

BCBS (2006), *International Convergence of Capital Measurement and Capital Standards*, June.

BCBS (2008), *Principles for Sound Liquidity Risk Management and Supervision*, September.

BCBS (2011), *Basel III: A global regulatory framework for more resilient banks and banking systems*, June (revised version of December 2010 document).

Beck, U. (1986), *Risikogesellschaft*, Suhrkamp Verlag, Frankfurt am Main.

Bernanke, B. (2008), "Financial regulation and financial stability", Speech at the FDIC's Forum on Mortgage Lending for Low and Moderate Income Households, Arlington, Virginia, 8 July, available at: http://www.federalreserve.gov/newsevents/speech/bernanke20080708a.htm (accessed 10 April 2011).

Bernstein, P.L. (1995), "Risk as a History of Ideas", *Financial Analysts Journal*, Vol. 51, No. 1, pp. 7-11.

Blommenstein, H.J. (2006), "Why is ethics not part of modern economics and finance? A historical perspective", *Finance & the Common Good*, Vol. 24, No. 1, pp. 54-64.

Callon, M. (2007), "An Essay on the Growing Contribution of Economic Markets to the Proliferation of the Social", *Theory, Culture & Society*, Vol. 24, Nos. 7-8, pp. 139-163.

Callon, M., Lascoumes, P. and Barthe, Y. (2009), *Acting in an Uncertain World: An Essay on Technical Democracy*, MIT Press, Cambdrige, MA.

Carretta, A., Farina, V. and Schwizer, P. (2010), "The 'day after' Basel 2: do regulators comply with banking culture?", *Journal of Financial Regulation and Compliance*, Vol. 18, No. 4, pp. 316-332.

Canguilhem, G. (1943), *Essai sur quelques problèmes concernant le normal et le pathologique,* Publications de la Faculté des Lettres de l'Université de Strasbourg, Strasbourg.

CCLRF (2005), *Regulation 97-02 of 21 February 1997, relating to internal control in credit institutions and investment firms,* March.

Crouhy, M.G., Jarrow, R.A. and Turnbull, S.M. (2008), "The Subprime Credit Crisis of 2007", *The Journal of Derivatives*, Vol. 16, No. 1, pp. 81-110.

Daemmerich, A. (2004), *Pharmacopolitics. Drug Regulation in the United States and Germany*, The University of North Carolina Press, Chapel Hill, NC.

Deleuze, G. (1981), *Spinoza : philosophie pratique*, Minuit, Paris.

Dripps, D.A. (2009), "Recreational drug regulation: a plea for responsibility", *Utah Law Review*, No. 1, pp. 117-152.

Freeman, R.E. (1994), "The Politics of Stakeholder Theory: Some Future Directions", *Business Ethics Quarterly*, Vol. 4, No. 4, pp. 409-421.

FSA (2011), *Product Intervention*, Discussion Paper DP11/1, January.

FSB (2010), *Intensity and Effectiveness of SIFI Supervision. Recommendations for enhanced supervision, prepared by the FSB in consultation with the IMF*, November.

Giddens, A. (1984), *The Constitution of Society*, Polity Press, Cambridge.

Giddens, A. (1990), *The Consequences of Modernity*, Polity Press, Cambridge.

Gray, J. and Hamilton, J. (2006), *Implementing Financial Regulation: Theory and Practice,* John Wiley & Sons, Chichester.

Guston, D.H. and Sarewitz, D. (2002), "Real-time technology assessment", *Technology and Society*, Vol. 24, Nos. 1-2, pp. 93-109.

Hache, E., Latour, B. and Camiller P. (2010), "Morality or Moralism? An Exercise in Sensitization", *Common Knowledge*, Vol. 16, No. 2, pp. 311-330.

Hutter, B. (2005), "The attractions of risk-based regulation: accounting for the emergence of risk ideas in regulation", Discussion paper No 33, Centre for Analysis of Risk and Regulation, London School of Economics and Political Science, London, March.

JFSA (2007), *Inspection Manual for Deposit-Taking Institutions*, February.

Jonas, H. (1979), *Das Prinzip Verantwortung: Versuch einer Ethik für die technologische Zivilisation*, Insel-Verlag, Frankfurt am Main.

Khurana, R. (2007), *From Higher Aims to Hired Hands: The Social Transformation of American Business Schools and the Unfulfilled Promise of Management as a Profession*, Princeton University Press, Princeton, NJ.

Knight, F.H. (1921), *Risk, Uncertainty, and Profit*, Houghton Mifflin Company, Boston, MA.

Langlitz, N. (2009), "Pharmacovigilance and Post-Black Market Surveillance", *Social Studies of Science*, Vol. 39, No. 3, pp. 395-420.

Latour, B. (1987), *Science in Action. How to Follow Scientists and Engineers through Society*, Harvard University Press, Cambridge, MS.

Lévinas, E. (1961), *Totalité et infini*. *Essai sur l'extériorité*, Martinus Nijhoff, Den Haag.

Lévinas, E. (1972), *Humanisme de l'autre homme*, Fata Morgana, Montpellier.

Longuenesse, B. (2005), *Kant on the Human Standpoint*, Cambridge University Press, Cambridge.

McCarthy, E. and Kelty, C. (2010), "Responsibility and Nanotechnology", *Social Studies of Science*, Vol. 40, No. 3, pp. 405-432.

McHugh, F. (2006), "Thinking Ethics while Learning Finance", *Finance & the Common Good*, Vol. 24, No. 1, pp. 38-46.

Merton, R. C. (1995), "Financial innovation and the management and regulation of financial institutions", *Journal of Banking and Finance*, Vol. 19, Nos. 3-4, pp. 461-481.

Meyer, J. and Rowan, B. (1977), "Institutionalized organizations: Formal structure as myth and ceremony", *American Journal of Sociology*, Vol. 83, No. 2, pp. 333-363.

Morgan, M.S. and Morrison, M. (1999), *Models as Mediators. Perspectives on Natural and Social Science*, Cambridge University Press, Cambridge.

NASD (2005), *New Products*, Notice to Members, No. 05-26, April.

Parsons, T. (1966), *Societies: Evolutionary and Comparative Perspectives*, Prentice Hall, Englewood Cliffs, NJ.

Parsons, T. (1979), "Religious and Economic Symbolism in the Western World", *Sociological Inquiry*, Vol. 49, No. 1, pp. 1-48.

Peirce, C.S. (1934), "How to Make Our Ideas Clear", in *Pragmatism and Pragmaticism*, Collected Papers, Vol. 5, Harvard University Press, Cambridge, MS, pp. 388-410.

Power, M. (2005), "The invention of operational risk", *Review of International Political Economy*, Vol. 12, No. 4, pp. 577-599.

Power, M. (2007), *Organized Uncertainty: Designing a World of Risk Management*, Oxford University Press, Oxford.

Power, M., Scheytt T., Soin K. and Sahlin K. (2009), "Reputational risk as a logic of organizing in late modernity", *Organization Studies*, Vol. 30, Nos. 2-3, pp. 165-188.

Ricoeur, P. (1990), *Soi-même comme un autre*, Seuil, Paris.

Schmidt Bies, S. (2004), “Enterprise-wide Compliance Programs”, Remarks made at the Bond Market Association’s Legal and Compliance Conference, New York, 4 February, available at http://www.federalreserve.gov/boarddocs/speeches/2004/20040204/default.htm (accessed 10 May 2011).

Schmidt Bies, S. (2006), “The continuous challenges of risk management”, Remarks made at the Financial Women’s Association Washington Briefing, Washington DC, 12 June, available at http://www.federalreserve.gov/newsevents/speech/bies20060202a.htm (accessed 10 May 2011).

Schot, J. and Rip, A. (1997), “The Past and Future of Constructive Technology Assessment”, *Technological Forecasting & Social Change*, Vol. 54, Nos. 2-3, pp. 251-268.

Schütz, A. (1959), “Tiresias, or our Knowledge of Future Events”, *Social Research*, Vol. 26, No. 1, pp. 71-89, repr. in *Collected Papers*, Vol. II – Studies in Social Theory, Martinus Nijhoff, Den Haag, pp. 277-293.

Shadbolt, P. (2011), “Hong Kong braced for a comeback”, *Financial Times*, 9 May, p. 29.

SIFMA (2011), *The Current Economic Environment and its Impact on Retail Investors*, SIFMA 2011 Annual Seminar, Compliance & Legal Division, 21 March.

Silber, W.L. (1981), “Innovations, competition and new contracts design in futures markets”, *Journal of Futures Markets*, Vol. 1, No. 2, pp. 123-155.

Spencer, P. (2000), *The Structure and Regulation of Financial Markets*, Oxford University Press, Oxford.

Tett, G. (2009, 2010[2]), *Fool’s Gold. How Unrestrained Greed Corrupted a Dream, Shattered Global Markets and Unleashed a Catastrophe*, Free Press, Abacus[2], London.

Van Gelder, J.W. and Vander Stichele, M. (2011), “How to integrate Sustainability criteria in capital requirements”, available at http://www.foeeurope.org/finance (accessed 10 April 2011).

Weber, M. (1904, 1905), “Die Protestantische Ethik und der ‘Geist’ des Kapitalismus”, *Archiv für Sozialwissenschaft und Sozialpolitik*, Vol. 20, pp. 1-54 and Vol. 21, pp. 1-110.

Weick, K. (1995), *Sensemaking in organizations*, Sage Publications, Thousand Oaks, CA.

Wright, C. and Rwabizambuga, A. (2006), “Institutional pressures, corporate reputation, and voluntary codes of conduct: an examination of the Equator Principles”, *Business and Society Review*, Vol. 111, No. 1, pp. 89-117.